Lloyd's Register

Rules and Regulations for the Classification of Naval Ships, January 2013

Notice No. 5

Effective Date of Latest Amendments:

See page 1

Issue date: November 2013

RULES AND REGULATIONS FOR THE CLASSIFICATION OF NAVAL SHIPS, *January 2013*

Notice No. 5

This Notice contains amendments within the following Sections of the *Rules and Regulations for the Classification of Naval Ships, January 2013.* The amendments are effective on the dates shown:

Volume	***Part***	***Chapter***	***Section***	***Effective date***
1	3	2	5	Corrigendum
1	3	3	4	Corrigenda
1	4	1	1	Corrigenda
1	6	3	15	Corrigendum
1	6	6	6	Corrigendum
2	6	1	1, 5	Corrigenda
2	8	2	1	Corrigendum
2	10	1	1	Corrigenda

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules and Regulations for the Classification of Naval Ships, January 2013* are to be read in conjunction with this Notice No. 5. The status of the Rules is now:

Rules for Naval Ships	Effective date:	January 2013
Notice No. 1	Effective date:	1 July 2013
Notice No. 2	Effective date:	1 January 2014
Notice No. 3	Effective date:	1 January 2014
Notice No. 4	Effective date:	1 January 2014
Notice No. 5	Effective date:	Corrigenda

Volume 1, Part 3, Chapter 2
Ship Design

CORRIGENDUM

■ *Section 5*
Fore and aft end arrangements

5.3 Minimum bow height and extent of forecastle

5.3.2 All sea-going ships are to be fitted with forecastles, or increased sheer on the upper deck or equivalent, such that the distance from the waterline design draught to the top of the exposed deck at side at the F.P. is not less than:

$$H_b = \left(6075\left(\frac{L_R}{100}\right) - 1875\left(\frac{L_R}{100}\right)^2 + \text{~~20~~}\ 200\left(\frac{L_R}{100}\right)^3\right) \times \left(2{,}08 + 0{,}609C_b - 1{,}603C_{wf} - 0{,}0129\left(\frac{L_R}{d_1}\right)\right)$$

where

C_b = block coefficient, not to be less than 0,68
L_R = Rule Length, in metres
H_b = minimum bow height, in mm
d_1 = draught at 85 per cent of the depth, *D, see* Ch 1,5.2.10
C_{wf} = waterplane area coefficient forward of midships $A_{wf}/\{(L_R/2) \times B\}$
B = moulded breadth, in metres
A_{wf} = is the forward waterplane area at draught d_1, in m^2.

Volume 1, Part 3, Chapter 3
Ship Control Systems

CORRIGENDA

■ *Section 4*
Rudder horns and appendages

4.6 Single arm shaft brackets ('P' – brackets)

4.6.1 Single arm shaft brackets are to have a section modulus, Z_{xx}, at the palm of not less than that determined from the formula:

$$Z_{xx} = \frac{a_s\ \text{~~d_{ms}^2~~}\ d_{up}^2\ f}{45000}\ \text{cm}^3$$

where

a_s = the length of the arm to be measured from the centre of the section at the palm to the centreline of the shaft boss, in mm, *see* Fig. 3.4.2
~~d_{ms}~~ d_{up} = the Rule diameter for an unprotected screwshaft, in mm, as given in Vol 2, Pt 3, Ch 2 using $A = 1{,}0$
~~A = 1,0~~
$f = 400/\sigma_u$
σ_u = ultimate tensile strength of arm material, in N/mm^2

The cross-sectional area of the bracket at the boss is to be not less than 60 per cent of the area of the bracket at the palm.

4.7 Double arm shaft brackets ('A' – brackets)

4.7.2 The arms of double arm shaft brackets are to have a section modulus, Z_{xx}, of not less than that determined from the formula:

$$Z_{xx} = 0{,}45n^3\ \text{cm}^3$$

where

n = the minimum thickness, in cm, of a hydrofoil section obtained from:

$$n = d_{ms}\sqrt{\left(\frac{f}{2000}\right)\left(1 + \sqrt{\left(1 + \left(\frac{0{,}0112}{f}\right)\left(\frac{a_d}{d_{ms}}\right)^2\right)}\right)}\ \text{cm}$$

$$n = d_{up}\sqrt{\left(\frac{f}{2000}\right)\left(1 + \sqrt{\left(1 + \left(\frac{0{,}0112}{f}\right)\left(\frac{a_d}{d_{up}}\right)^2\right)}\right)}\ \text{cm}$$

a_d = the length of the longer strut, in mm, *see* Fig. 3.4.3
~~d_{ms}~~ d_{up} and f are as given in 4.6.1.

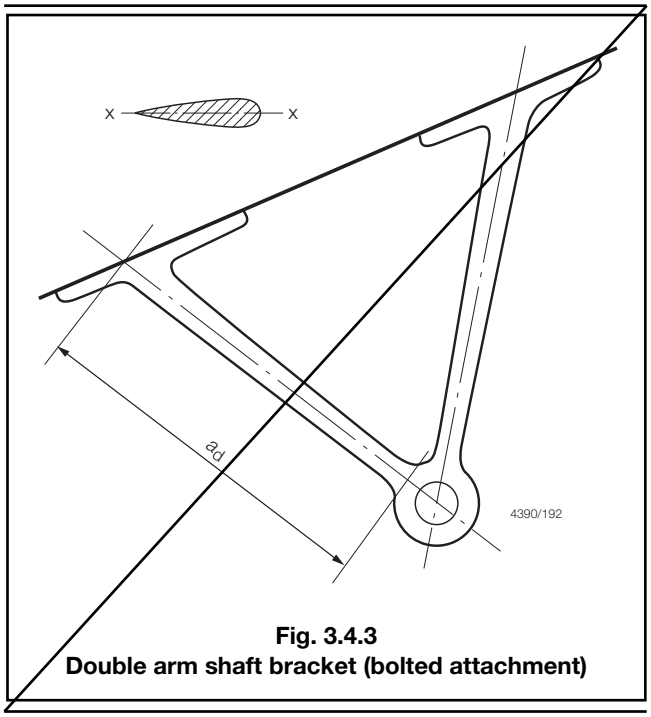

Fig. 3.4.3
Double arm shaft bracket (bolted attachment)

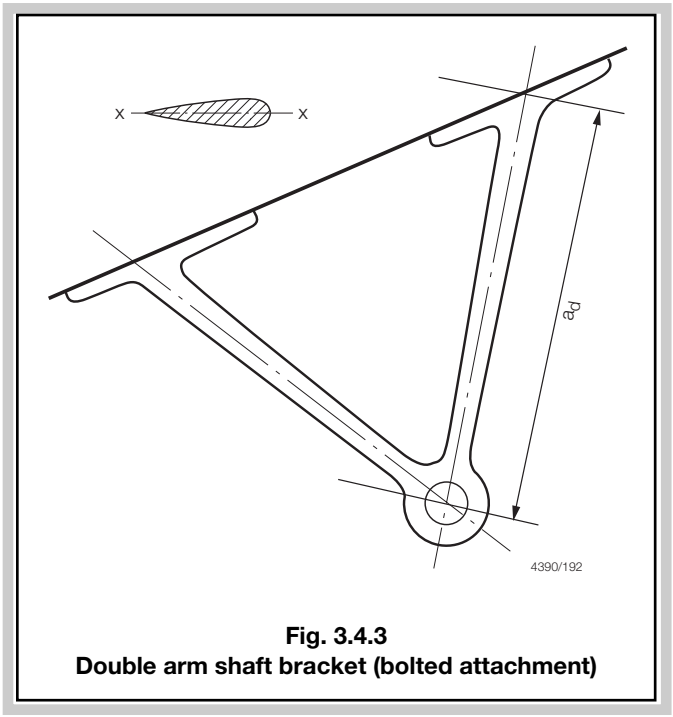

Fig. 3.4.3
Double arm shaft bracket (bolted attachment)

Volume 1, Part 4, Chapter 1
Military Design

CORRIGENDA

■ *Section 1*
General requirements

1.4 Materials and welding

1.4.1 In addition to the requirements of Pt 6, Ch 2, ships having the following military distinction notations are to comply with the requirements of this Section for the designated areas unless specified otherwise. The requirements apply to plates, stiffeners, fillet welds, butt welds and welded attachments:

- **EB1**, **EB2**, **EB3**, **EB4** Above water portion of the hull, superstructure and upper decks assessed against external blast requirements.
- **IB1**, **IB2** Blast bulkheads.
- ~~**SH1, SH2**~~ **SH** Hull envelope plating.
- **WH1**, **WH2**, **WH3** Sheerstrake, stringer plate (including margin angle), bilge strake, keel plate, garboard strake and hull inserts.
- **RSA1**, **RSA2**, **RSA3** Sheerstrake, stringer plate (including margin angle), bilge strake, keel plate, garboard strake and hull inserts.

1.4.2 Crack arresting strakes of minimum Grade E are to be fitted in the following locations, from $0{,}2L_R$ to $0{,}8L_R$, according to the notation assigned:

- ~~**SH1, SH2**~~ **SH** Sheerstrake, stringer plate (including margin angle), bilge strake, keel plate, garboard strake and hull inserts in these areas.
- **WH1**, **WH2**, **WH3** Sheerstrake, stringer plate (including margin angle), bilge strake, keel plate, garboard strake and hull inserts in these areas.
- **RSA1, RSA2, RSA3** Sheerstrake, stringer plate (including margin angle), bilge strake, keel plate, garboard strake and hull inserts in these areas.

Where the hull envelope is made entirely from Grade D steel, crack arresting strakes of minimum Grade E need not be fitted in the specified locations.

Volume 1, Part 6, Chapter 3
Scantling Determination

CORRIGENDUM

■ *Section 15*
Strengthening for wave impact loads above waterline

15.2 Strengthening against bow flare wave impacts

15.2.1 The shell envelope above the ~~summer load~~ design waterline is to be strengthened against bow flare wave impact pressures. The strengthening is to extend vertically to the uppermost deck level, including the forecastle deck, if fitted.

Volume 1, Part 6, Chapter 6
Material and Welding Requirements

CORRIGENDUM

■ *Section 6*
Inspection and testing procedures

6.1 General

(*Part only shown*)

Table 6.6.1 Testing requirements

NOTES
1. Leak or hydropneumatic testing may be accepted, provided that at least one tank of each type is structurally tested, to be selected in connection with the approval of the design, *see* 6.7.
2. When hose testing cannot be performed without damaging possible outfittings already installed, it may be replaced by a careful visual inspection of all the crossings and welded joints. Where necessary, dye penetrant test or ultrasonic leak test may be required.
3. Where applicable testing of the after peak is to be carried out after the stern tube has been fitted.
4. The highest point of the tank is generally to exclude hatchways.
5. If leak or hydropneumatic testing is carried out, arrangements are to be made to ensure that no pressure in excess of 0,30 bar (0,30 kgf/cm^2) can be applied.
6. Watertight doors and hatches to be supplied with a test certificate stating the maximum pressure head for which they are suitable. For large watertight closing appliances that cannot be tested *see* Pt 4, Ch 3,3.4 or 4.3.
7. *See also* SOLAS ~~Reg. II-1/18~~ Reg. II-1/16. Where the door has had the full hydrostatic test before installation, the hose test may be replaced by
careful visual examination after full operational tests.
8. If the magazine is required to contain an overpressure, for example due to a fire, the testing requirements are to be specified by the Naval Authority.

Volume 2, Part 6, Chapter 1
Steering Gear

CORRIGENDA

■ *Section 1*
General requirements

1.2 Definitions

1.2.6 **Maximum ahead service speed** means the maximum service speed which the ship is designed to maintain, at the ~~summer load~~ deepest waterline at maximum propeller RPM and corresponding engine MCR.

■ *Section 5*
Design and construction

5.2 Rudder, rudder stock, tiller and quadrant

5.2.4 For conical sections, S is based on the following equation:

$$S = \frac{\mu A \sigma_r}{\sqrt{(W + A \sigma_r \tau)^2 + Q^2}} \qquad \frac{\mu A \sigma_r}{\sqrt{(W + A \sigma_r \theta)^2 + Q^2}}$$

where

A = interfacial surface area, in mm^2

W = weight of rudder and stock, if applicable, when tending to separate the fit, in N

Q = shear force $= \frac{2M}{d_m}$ in N

where d_m in mm is the mean contact diameter of tiller/stock interface and M, in Nmm is defined in ~~1.6.3~~ 5.2.3

θ = cone taper half angle in radians (e.g. for cone taper 1:10, θ = 0,05)

μ = coefficient of friction

σ_r = radial interfacial pressure or grip stress, in N/mm^2.

Volume 2, Part 8, Chapter 2
Other Pressure Vessels

CORRIGENDUM

■ *Section 1*
General requirements

1.6 Plans

1.6.1 Plans of pressure vessels are to be submitted in triplicate for consideration where all the conditions in (a) or (b) are satisfied:

(a) The vessel contains vapours or gases, e.g. air receivers, hydrophore or similar vessels and gaseous CO_2 vessels for fire-fighting, and

$pV > 600$

$p > 1$

$V > 100$

V = volume (litres) of gas or vapour space

(b) The vessel contains liquefied gases~~, and~~ or flammable liquids

$p > 7$

$V > 100$

V = volume (litres)

p is as defined in 1.2.1.

Volume 2, Part 10, Chapter 1
Electrical Engineering

CORRIGENDA

■ *Section 1*
Switchgear and control gear assemblies

7.5 Creepage and clearance distances

(*Part only shown*)

Table 1.7.1 Minimum clearance distances

NOTES
1. For assemblies installed in spaces where the pollution degree is > 3, *see* ~~7.5.3~~ 7.5.2.
2. For the verification requirements for a verified assembly refer to IEC 61439-2.
3. Clearance distances with reference to the applicable relevant National or International Standards are to be submitted for approval, *see* 1.3.3.

(*Part only shown*)

Table 1.7.2 Minimum creepage distance

NOTES
1. For verified assemblies a minimum creepage distance of 16 mm is permitted for LV switchboards, *see* ~~7.5.3~~ 7.5.2.
2. Creepage distances, with reference to the applicable relevant National or International Standards, are to be submitted for approval, *see* 1.3.3.

Published by Lloyd's Register
Registered office
71 Fenchurch Street, London, EC3M 4BS
United Kingdom